



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/637,079

08/08/2003

Karen L. Sauer

83,274

9072

26384

7590

09/29/2004

NAVAL RESEARCH LABORATORY  
ASSOCIATE COUNSEL (PATENTS)  
CODE 1008.2  
4555 OVERLOOK AVENUE, S.W.  
WASHINGTON, DC 20375-5320

EXAMINER

VARGAS, DIXOMARA

ART UNIT

PAPER NUMBER

2859

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/637,079

**Applicant(s)**

SAUER ET AL.

**Examiner**

Dixomara Vargas

**Art Unit**

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                                               |                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>08/08/03</u> . | 6) <input type="checkbox"/> Other: ____.                                                |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the test sample and a flow chart disclosing the steps presented in claim 8 that is performed by figure 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Barrall et al. (US 6,392,408 B1).

With respect to claims 1, 8 and 15, Barrall discloses a detection apparatus comprising: means for generating an RF composite pulse (Column 28, lines 26-47; Figures 3-4, #30), wherein said RF composite pulse consists essentially of two or more sub-pulses of different phase; means for applying the RF composite pulse to a test sample (Column 28, lines 26-47); means for detecting a nuclear resonance return signal in response to the application of the RF composite pulse to the test sample (Figure 3, #18, #45a and #45b), wherein the detected nuclear resonance return signal includes a true signal component and a ringing signal component; and processing means for processing the detected nuclear resonance return signal to identify the true signal component (Column 29, lines 7-38); wherein the phases of each of the sub-pulses of the composite pulse, a phase of the true signal component and a phase of the ringing signal component are different (Columns 28 and 29, lines 26-47 and 7-38 respectively).

4. With respect to claims 2, 9 and 16, Barrall discloses the phase of the first sub-pulse is 0 and the phase of the second sub-pulse with respect to the first sub-pulse is x, such that the composite pulse is designated as (0, x) (Column 28, lines 39-47).

5. With respect to claims 3, 10 and 17, Barrall discloses  $x = 45^\circ$  (Column 28, lines 39-47).

Art Unit: 2859

6. With respect to claims 4, 11 and 18, Barrall discloses means for generating an RF composite pulse generates a sequence of composite pulses (Column 28, lines 26-47; Figures 3-4, #30).
7. With respect to claims 5, 12 and 19, Barrall discloses the sequence of composite pulses includes (0, x), (0, -x+180), (0, x-180), (0, -x) (Column 28, lines 39-47).
8. With respect to claims 6, 13 and 20, Barrall discloses the processing means sums detected nuclear resonance return signals corresponding to each of the composite pulses with weighting factors -1, +1, -1 and +1 respectively (Column 13, lines 1-49; Figure 3, #48).
9. With respect to claims 7, 14 and 21, Barrall discloses the true signal component is a NQR signal (Abstract).
10. With respect to claim 22, Barrall discloses a pulse generator mechanism includes (Figure 3, #30) a pulse programmer (Figure 3, #32) and radio frequency gate (Figure 3 discloses a Gated RF signal from #30 to isolation transformer) and a radio frequency power amplifier (Figure 3, RF power amplifier connected to the transmitter isolation diodes and attenuator).
11. With respect to claim 23, Barrall discloses the pulse generator mechanism (Figure 3, #30) is coupled to the coil via (Figure 3, #34) a coupling network (Figure 3, matching network & balun), and wherein the detector is coupled to the coil via the coupling network (Figure 3).
12. With respect to claim 24, Barrall discloses an alarm mechanism activated by the processor with the true signal component exceeds a threshold value (Column 15, lines 11-24).

Art Unit: 2859

***Conclusion***

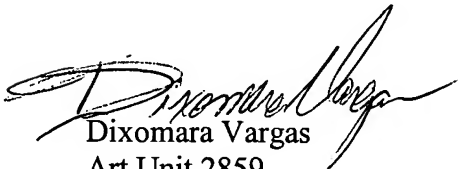
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art cited in the PTO 892 discloses resonance systems with filtering or the ringing signal wherein the phase of the ringing signal is different from the true signal.

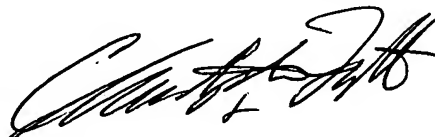
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (571) 272-2252.

The examiner can normally be reached on 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Dixomara Vargas  
Art Unit 2859  
September 26, 2004

  
Diego Gutierrez  
Supervisory Patent Examiner  
Technology Center 2800

**CHRISTOPHER W. FULTON  
PRIMARY EXAMINER**